

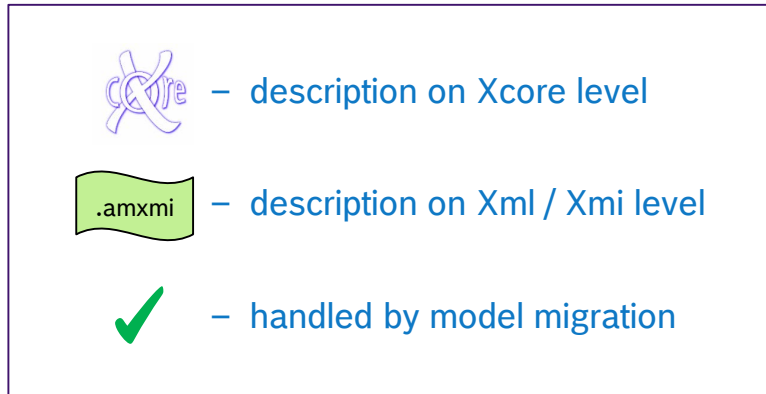


MODEL CHANGES

APP4MC 0.9.4 (APR 2019)

Technical description of model changes

- ▶ Port Interface -> fixed typo
- ▶ Datatype “Mapping” -> renamed
- ▶ Runnable Deadline -> removed and replaced by constraint
- ▶ Numeric Modes -> new concept



APP4MC 0.9.4

Port Interface -> fixed typo



[eb6f7e14] Fixed typo in PortInterface enum: ABH -> AHB

```
enum PortInterface
{
    _undefined_
    custom
    CAN
    Flexray
    LIN
    MOST
    Ethernet
    SPI
    I2C
    AXI
    ABH
    APB
    SWR
}
```

```
enum PortInterface
{
    _undefined_
    custom
    CAN
    Flexray
    LIN
    MOST
    Ethernet
    SPI           // Serial Peripheral Interface
    I2C           // Inter-Integrated Circuit
    AXI           // Advanced eXtensible Interface
    AHB          // Advanced High-performance Bus
    APB           // Advanced Peripheral Bus
    SWR           // Serial WireRing
}
```

[eb6f7e14] Fixed typo in PortInterface enum: ABH -> AHB

```
<modules xsi:type="am:ProcessingUnit"
  name="Core_1"
  frequencyDomain="FrequencyDomain_1?type=FrequencyDomain"
  definition="DefaultCore?type=ProcessingUnitDefinition">
  <ports name="port" bitWidth="32" priority="0" portType="initiator" portInterface="ABH"/>
</modules>
```

```
<modules xsi:type="am:ProcessingUnit"
  name="Core_1"
  frequencyDomain="FrequencyDomain_1?type=FrequencyDomain"
  definition="DefaultCore?type=ProcessingUnitDefinition">
  <ports name="port" bitWidth="32" priority="0" portType="initiator" portInterface="AHB"/>
</modules>
```

APP4MC 0.9.4

Datatype “Mapping” -> renamed

Model Changes - APP4MC 0.9.4, April 2019



[545292] Moved size attribute to abstract class TypeDefinition

[545399] Renamed DataTypeMapping to avoid mix-up with mapping to memory

```
class DataPlatformMapping extends BaseObject
{
    String platformName
    String platformType
}

abstract class TypeDefinition ...
{
}

class DataTypeDefinition extends TypeDefinition
{
    contains DataType dataType
}

class BaseTypeDefinition extends TypeDefinition
{
    contains DataSize size
    contains DataPlatformMapping[] dataMapping
}
```

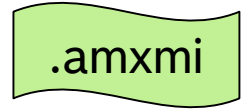
```
class Alias extends BaseObject
{
    String target
    String alias
}

abstract class TypeDefinition ...
{
    contains DataSize size
}

class DataTypeDefinition extends TypeDefinition
{
    contains DataType dataType
}

class BaseTypeDefinition extends TypeDefinition
{
    contains Alias[] aliases
}
```

Model Changes - APP4MC 0.9.4, April 2019



[545292] Moved size attribute to abstract class TypeDefinition

[545399] Renamed DataTypeMapping to avoid mix-up with mapping to memory

```
<typeDefinitions xsi:type="am:BaseTypeDefinition" name="Boolean">  
  <size value="8" unit="bit"/>  
  <dataMapping platformName="AR" platformType="Boolean"/>  
  <dataMapping platformName="C" platformType="bool"/>  
</typeDefinitions>
```

```
<typeDefinitions xsi:type="am:BaseTypeDefinition" name="Boolean">  
  <size value="8" unit="bit"/>  
  <aliases target="AR" alias="Boolean"/>  
  <aliases target="C" alias="bool"/>  
</typeDefinitions>
```

APP4MC 0.9.4

Runnable Deadline -> removed



[545414] Removed attribute 'deadline' from Runnable class

```
<runnables name="ABSCalculation" callback="false" service="false">  
  ...  
  <deadline value="120" unit="us"/>>  
  ...  
</runnables>
```

encode

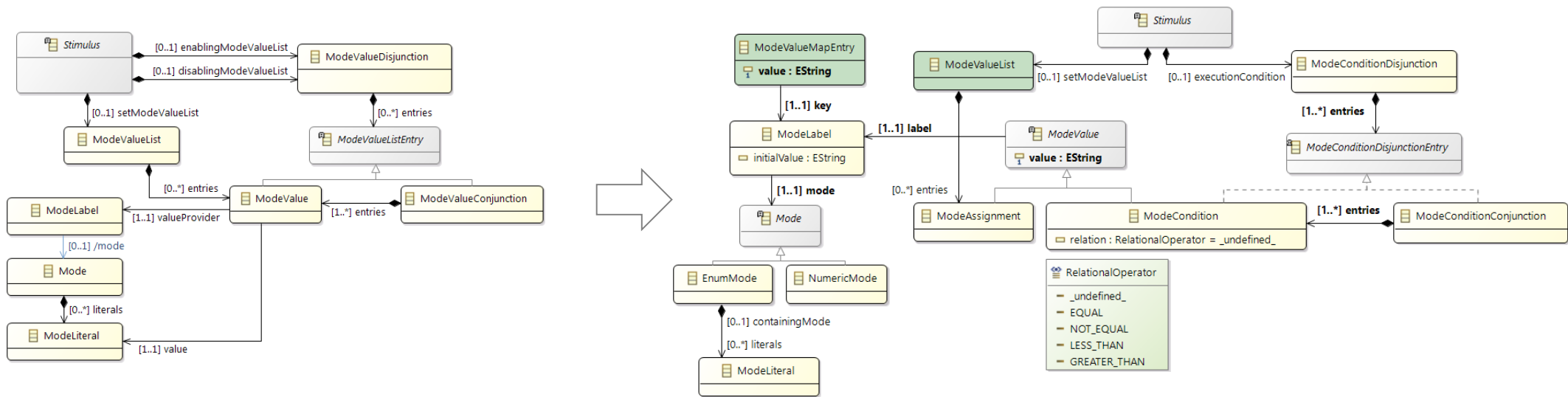
```
<constraintsModel>  
  <requirements xsi:type="am:RunnableRequirement"  
    name="deadline"  
    runnable="ABSCalculation?type=Runnable">  
    <limit xsi:type="am:TimeRequirementLimit" limitType="UpperLimit" metric="ResponseTime">  
      <limitValue value="120" unit="us"/>>  
    </limit>  
  </requirements>  
</constraintsModel>
```

APP4MC 0.9.4

Numeric Modes -> new concept

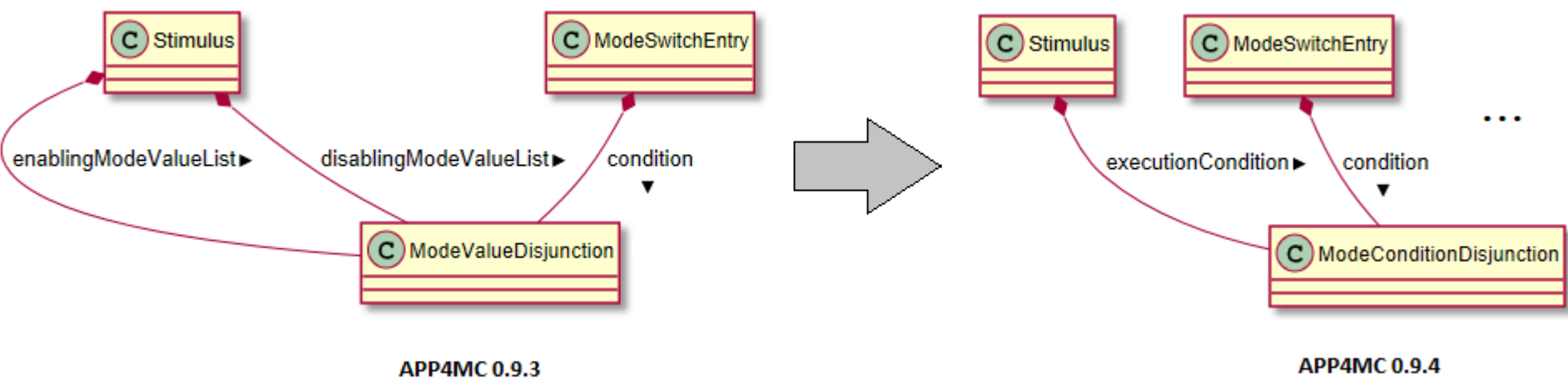
Model Changes - APP4MC 0.9.4, April 2019

[545772] Introduced numeric modes, comparison of modes, extended modification



Model Changes - APP4MC 0.9.4, April 2019

[545979] Implemented attribute 'executionCondition' for Stimulus





[545772] Introduced numeric modes, comparison of modes, extended modification

Modes and Mode Labels (sub-elements of SWModel)

```
<modes name="Mode1">
  <literals name="abc"/>
  <literals name="def"/>
</modes>
<modeLabels name="ModeLab1" initialValue="Mode1/abc?type=ModelLiteral"/>
```

```
<modes xsi:type="am:EnumMode" name="Mode1">
  <literals name="abc"/>
  <literals name="def"/>
</modes>
<modeLabels name="ModeLab1" mode="Mode1?type=EnumMode" initialValue="abc"/>
```



[545772] Introduced numeric modes, comparison of modes, extended modification

Mode Labels II

(sub-elements of SWModel)

```
<modeLabels name="ModeLab1">  
  <initialValue href="amlt:/#Mode1/abc?type=ModeLiteral"/>  
</modeLabels>
```

decode

```
<modeLabels name="ModeLab1" initialValue="abd">  
  <mode xsi:type="am:EnumMode" href="amlt:/#Mode1?type=EnumMode"/>  
</modeLabels>
```



[545772] Introduced numeric modes, comparison of modes, extended modification

Mode Label Access “Read” (sub-element of Runnable)

```
<runnableItems xsi:type="am:ModeLabelAccess"  
  data="ModeLab1?type=ModeLabel"  
  access="read"  
  modeValue="Mode1/abc?type=ModeLiteral"/>
```

decode

```
<runnableItems xsi:type="am:ModeLabelAccess"  
  data="ModeLab1?type=ModeLabel"  
  access="read"  
  value="abc" />
```



[545772] Introduced numeric modes, comparison of modes, extended modification

Mode Label Access “Write / Set” (sub-element of Runnable)

```
<runnableItems xsi:type="am:ModeLabelAccess"  
  data="ModeLab1?type=ModeLabel"  
  access="write"  
  modeValue="Mode1/def?type=ModeLiteral"/>
```

decode

```
<runnableItems xsi:type="am:ModeLabelAccess"  
  data="ModeLab1?type=ModeLabel"  
  access="set"  
  value="def"/>
```



[545772] Introduced numeric modes, comparison of modes, extended modification

Mode Label Access II

(sub-element of Runnable)

```
<runnableItems xsi:type="am:ModeLabelAccess" access="write">  
  <data href="aml:t:/#ModeLab1?type=ModeLabel"/>  
  <modeValue href="aml:t:/#ModeLab1/def?type=ModeLiteral"/>  
</runnableItems>
```

decode

```
<runnableItems xsi:type="am:ModeLabelAccess" access="set" value="def">  
  <data href="aml:t:/#ModeLab1?type=ModeLabel"/>  
</runnableItems>
```



[545772] Introduced numeric modes, comparison of modes, extended modification

SetModeValueList of Stimulus

```
<setModeValueList>
  <entries
    valueProvider="ModeLab1?type=ModeLabel"
    value="Mode1/def?type=ModeLiteral"/>
  </setModeValueList>
```

decode

```
<setModeValueList>
  <entries
    label="ModeLab1?type=ModeLabel"
    value="def"/>
  </setModeValueList>
```



[545772] Introduced numeric modes, comparison of modes, extended modification

Condition of ModeSwitchEntry

(sub-element of ModeSwitch and RunnableModeSwitch)

```
<condition>
  <entries xsi:type="am:ModeValue"
    valueProvider="stateT1?type=ModeLabel"
    value="StateT1/StateT1_0?type=ModeLiteral" />
</condition>
```

decode

```
<condition>
  <entries xsi:type="am:ModeCondition"
    label="stateT1?type=ModeLabel"
    value="StateT1_0"
    relation="EQUAL" />
</condition>
```



[545772] Introduced numeric modes, comparison of modes, extended modification

Nested Condition

(sub-element of ModeValueConjunction / ModeConditionConjunction)

```
<...>
  <entries xsi:type="am:ModeValueConjunction">
    <entries valueProvider=... />
  </entries>
</...>
```

```
<...>
  <entries xsi:type="am:ModeConditionConjunction">
    <entries label=... />
  </entries>
</...>
```

like 'condition',
but no xsi:type



[545772] Introduced numeric modes, comparison of modes, extended modification

EnablingModeValueList of Stimulus (disablingModeValueList ...)

```
<enablingModeValueList>  
  <entries xsi:type="am:ModeValue"  
    valueProvider="stateT1?type=ModeLabel"  
    value="StateT1/StateT1_0?type=ModeLiteral" />  
</enablingModeValueList>
```

decode

```
<executionCondition>  
  <entries xsi:type="am:ModeCondition"  
    label="stateT1?type=ModeLabel"  
    value="StateT1_0"  
    relation="EQUAL" />  
</executionCondition>
```